

Application No.: 10/772,752
Amendment dated: April 13, 2006
Reply to Final Office Action of January 13, 2006
Attorney Docket No.: 22176.28 (ITW-14460)

b.) Remarks

Claims 1-15 are pending in this application. Claims 1, 5 and 15 have been amended in various particulars as indicated hereinabove for clarity. No new elements have been added to the amended Claims. Claim 6 was cancelled.

Turning first to the Office Action Summary Sheet, Claims 1-15 are pending in this application. Claims 7-10 and 12-14 are withdrawn from consideration. Claims 1-6, 11 and 15 are rejected.

I. Turning now to the merits, Claims 1-6, 11 and 15 were objected to because of informalities. Claims 1-6, 11 and 15 have been rewritten to correct these informalities.

1) To answer these objections, Applicant explains as follows. With regard to item 1 of the Office Action on page 2, each panel comprises a holographic embossing for diffracting incident light, each panel's holographic embossing is comprised of pixels diffracting incident light at the a certain angle, which is the same for the pixels within the same panel (which is described as holographically configured).

The term "optically variable" is well known in the security industry and denotes a holographic structure that changes appearance when viewed at different angles¹. The diffraction gratings of the holographic configuration of a panel, as recited in Claim 1, make its appearance optically variable, because white light incident on a holographically configured panel diffracts different components of the visible light spectrum at different angles due to different wavelengths of the components (from red to violet). Therefore, a viewer will see different colors of diffracted light at different angles. Relevant description in the specification can be found, for example, in paragraph [0008]

Each of the panels is configured in such a way that it reflects incoming light at a certain distinct angle of reflection. A panel reflecting at a predetermined angle can be made by either embossing the panel to reflect at the predetermined holographic reflective angle (using a conventional holographic table), or by digitally creating the optically variable

¹ See, for example, <http://www.nbs.sk/MENA/BANKOVKY/OZTA.HTM>

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panel by embossing it from a plate or shim produced in a pixel-by-pixel manner (for example, by using a computer controlled origination machine).

Applicant respectfully asserts that in view of the presented explanation of terms known in the industry, claimed panel embossed to have holographically and optically variable configuration is well-defined.

- 2) With regard to Claim 5, it has been amended to clarify that each angle α_n corresponds to a number, which can be assigned to each angle in any desired way, including, but not limiting to, an arbitrary assignment,
- 3) Claim 6 has been cancelled.
- 4) With regard to Claim 15, the structure of the multi-layer image forming material has been added to that Claim. With regard to the "multi-layer holographic pixel" element – Applicant is not sure what the confusion is. It is a pixel transferred from the image forming material onto a substrate. The image forming material is multi-layered, as claimed in Claim 15, the pixel made of that material is also multi-layered, since it is the same material. It is asserted that with more structure of the material now in Claim 15 the confusion has been resolved.

II. Claims 1-3, 5-6 and 11 were rejected under 35 U.S.C. 103(a) over the patent to Rice (US 5,396,839). This rejection is respectfully traversed for the following reasons.

For an obviousness rejection to be proper, the Patent Office must meet the burden of establishing a *prima facie* case of obviousness. The Patent Office must meet the burden of establishing that all elements of the invention are disclosed in the cited publications, which must have a suggestion, teaching or motivation for one of ordinary skill in the art to modify a reference or combined references². The cited publications should explicitly provide a reasonable expectation of success, determined from the position of one of ordinary skill in the art at the time the invention was made³.

² *In re Sang Su Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).

³ *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

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Contrary to the assertion of the Patent Office in item 3 of the Office Action (page 4), *no multi-layer material for forming an image on a substrate* is disclosed in Rice. In particular, Claim 1 recites a multi-layer material to be used to form an image on a substrate. The multi-layer material in Claim 1 and Claim 11 is not the substrate on which an image is later formed, otherwise the material and the substrate wouldn't have been two different words.

In Rice, there is no multi-layer material as recited in Claim 1 and Claim 11, which material can be used for forming an image on a separate substrate. Rice discloses a printing stock 22 on which a color image 25 is formed. If the printing stock in Rice could be analogized with anything at all recited in Claims 1 and 11 (which, as Applicant asserts, it cannot), the printing stock in Rice would be the substrate, because the Rice printing stock is the medium on which an image is formed, not the multi-layer material which is used for forming an image on a separate substrate. Rice discloses the resulting image on a printing stock (substrate), not the multi-layer material to be used to obtain an imaged substrate.

If one closely examines the disclosure in Rice, no material with a plurality of panels which can be used to form an image on a substrate could be found there at all. In Rice ink 54 from an ink roller 28 sticks on printing plate 31 only in such places where composite image 48 on printing plate 31 is (Col. 7, lines 30-33). Ink 54 is then passed by blanket cylinder 32 onto printing stock 22. That way a single color image 25 is formed on printing stock 22. There is no material, and certainly no multi-layer material in Rice which is used for forming an image on the substrate-printing stock. What Rice uses for forming an image on the printing stock is ink 54 from ink roller 28, printing plate 31 with a composite image 48 and a couple of blanket cylinders (Col. 7, lines 30-44). Rice described a kind of a printing press 24 forming a certain image on the printing stock by offset lithography (Col. 7, lines 15-16). The offset lithography printing process in Rice does not use (and does not describe) a multi-layer material with a plurality of holographically embossed or dot-matrix configured panels of the multi-layer material to

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form an image on a substrate, as claimed in Claim 1 and Claim 11 of the present application.

With regard to *the embossed layer* recited in Claim 1 and Claim 11, the Office Action asserts that Rice discloses "embossed layer (55, Figures 8-11)." Contrary to this assertion, reference numeral 55 does not correspond to an embossed layer. As disclosed in Rice, "...each dot 50 of a halftone image now manifested by a correspondingly located ink dot 55 on printing stock 22." (Col. 7, lines 47-48). These ink dots 55 in Rice are formed on the printing stock by ink 54 via the offset lithography printing process described in Rice. Ink dots 55 on the already imaged printing stock can be embossed with a diffraction grating, as disclosed in Col. 8, but this later embossing of separate ink dots of an already formed image on the printing stock has nothing to do with a multi-layer material with a plurality of panels, wherein panels, not individual dots, are embossed or dot-matrix configured to have holographic properties. Consistent with the disclosure in Rice, reference numerals 55 in Figures 8-11 denote individual dots, not a layer, not a panel.

With regard to *the individual panels* of the embossed layer, there is no disclosure of panels in the multi-layer material, which can be used to print a holographic image on a substrate, contrary to the assertion on page 4 of the Office Action. Diffraction gratings 56 in Rice are formed on individual ink dots 55 after the individual ink dots have already been deposited on the substrate-printing stock to reproduce the desired image. An image in Rice is formed out of individual ink dots, which can be embossed with diffraction gratings. There are no panels on any material disclosed in Rice, and cannot be, because the Rice offset lithography printing process uses liquid ink for printing, and does not use as an image printing source any solid material of the kind recited in Claim 1 and Claim 11. Rice describes the material (printing stock) on which the ink dots can be deposited to produce a desired image, but the printing stock with an image formed with colored ink dots has nothing to do with the multi-layer material use for forming an image on a separate substrate, the material with a plurality of individual panels, each of which diffracts lights at the same predetermined diffraction angle, the angle being different for each individual panel.

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In view of the above-presented arguments, at the very least, Rice lack any disclosure of such elements of Claim 1 and Claim 11 as a multi-layer material for forming an image of a substrate, an embossed layer with a plurality of panels, and each panel being holographically configured to diffract light at a predetermined angle, which is different for each individual panel. Therefore, Claim 1 and Claim 11 are patentable over Rice under 35 U.S.C. 103(a). Withdrawal of the rejection and allowance of Claim 1 and Claim 11 is respectfully solicited.

Claims 2-3, 5-6 depend off allowable Claim 1 and should be allowable. Allowance of these dependent Claims is respectfully requested.

Claim 4 was rejected under 35 U.S.C. 103(a) over Rice as applied to Claim 1 above, and further in view Mallik et al (US 5,085,514). This rejection is respectfully traversed for the following reasons. At the very least, Rice does not disclose three elements of Claim 1, as asserted in the above-presented argument. Mallik does not cure the lack of the disclosure in Rice, and, therefore, Claim 4 does satisfy the patentability requirements of 35 U.S.C. 103(a). Allowance of Claim 4 is respectfully requested.

Claim 15 was rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice (PN 5,396,839). This rejection is respectfully traversed for the following reasons. Rice does not disclose a multi-layer pixel on a substrate. Rice discloses an ink dot on a substrate, which is just ink. Rice cannot disclose a multi-layer pixel, because Rice teaches a certain offset lithography printing, in which ink dots are formed on a printing stock by means of an ink cylinder and a number of blank cylinders. Embossed diffraction gratings on ink dots don't make the ink dot anything like a multi-layer pixel claimed in Claim 15.

Therefore, Claim 15 is patentable over Rice under 35 U.S.C. 103(a). Withdrawal of the rejection and allowance of Claim 15 is respectfully solicited.

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III. Claims 1-6 and 11 were rejected under 35 U.S.C. 103(a) over Waitts (US 5,834,096) in view of Rice. This rejection is respectfully traversed for the following reasons.

The Patent Office refers to Figs. 1-3 as an alleged illustration of the materials claimed in independent Claims 1 and 11. In particular, the Patent Office has stated that "Waitts teaches a multi-layer material that is comprised of an embossable layer (32, Figures 1-3), wherein holographic indicia for providing different 3D effects (18 and 20) are formed on the embossable layer, (please see columns 3-4). It is implicitly true that the holographic indicia diffract light at a predetermined diffraction/reflection angles. Waitts teaches that different holographic effects can be reproduces which implicitly means that there are more than one panel each including a specific hologram."

Applicant's attorney has reviewed the disclosure of Waitts and could not find any teaching of the material as claimed in Claim 1 and Claim 11. Specifically, with regard to Fig. 1 Waitts says that "[T]he card includes printed, readable indicia, i.e. in the form of readable letters 12, numbers 14, a diffraction grating pattern 16 depicted as a pattern of dashes and dots and having a two dimensional or 2D effect, 3D holographic indicia represented by virtual solids 18 and 20 drawn in dashed lines, and a multicolored design 22 having variously colored segments 24." (Col. 3, lines 14-19). "The virtual images 18 and 20 are created by embossed reflection holograms." (Col. 3, lines 24-26). Nothing else was found in Waitts with regard to indicia 18 and 20. On other words, Fig. 1, as well as Figs. 2-3, shows a card with some holographic images, including 3D images, already formed on that card. That already formed image on the card has nothing to do with the multi-layer material having the structure claimed in Claim 1 and Claim 11, for forming an image. That card in Fig. 1 is a final product, its material cannot be used for forming an image on a different substrate, therefore, it cannot be a multilayer material for forming an image, as claimed in Claim 1 and Claim 11.

To further address the assertions of the Patent Office, Applicant point out that the fact that the card shown in Fig. 1 has 3D holographic indicia does not suggest that these

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indicia form the plurality of panels. Waitts says that indicia 18 and 20 have a 3D effect, but is silent on the underlying structure that causes such visual effect. It is unclear from Waitts whether the structure of indicia 18 and 20 is a panel-like at all. The dashed lines and dots shown in Fig. 1 are not even panels, but one-dimensional lines or just dots. Nothing in the Watts disclosure teaches or suggests that indicia 18 or 20 have the structure that could be a panel. The description in Watts suggests that these indicia are dashed lines with a 3D visual effect. Therefore, no disclosure of a plurality of panels as claimed in Claims 1 and 11 could be found in Waitts, contrary to the assertion of the Patent Office.

Furthermore, while it is known that a diffraction grating will diffract incoming light in accordance with the general diffraction equation in which the angle of diffraction of one of the variables, Applicants claimed multi-layer material for forming an image claims that the material comprises a plurality of panels, and that each panel is configured in a specific way, namely, that each holographic panel diffracts at a know predetermined angle of diffraction. Nothing in Waitts, combined with general diffraction equation, suggests such claimed structure of the material for forming an image.

Also, as described in Waitts with regard to Fig. 4, the "hologram may be formed in a layer of embossable media, typically by embossing with a roll die." (Col. 4, lines 53-55). In other words, the resulting holographic image is embossed in layer 32. The same holographic image is presented, for, example, in Fig. 3 of the card, formed by hot stamping, as described in Watts with regard to Fig. 3. An image of the kind describes in Waitts normally contains diffractions gratings of different pitch and orientation to create the expected holographic effect. To the contrary, the embossing of the plurality of panels is not the final holographic image of Waitts, but, as claimed in Claims 1 and 11, the first panel with embossing that has the same pitch and orientation of its gratings (therefore, the same angle of reflection, as claimed), the second panel comprising embossing of the gratings of the same second pitch and orientation (therefore, a second predetermined angle, the same for the whole second panel), and so on for each panel of the plurality of panels in the material. No description, teaching or motivation to come up with such a structure could be found anywhere in Waitts.

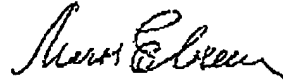
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For the above-articulated reasons, Claims 1 and 11 (together with Claims 2-5 dependent off Claim 1) satisfy the patentability requirements of 35 USC 103(a) and are patentable. Allowance of these Claims is respectfully solicited.

Applicants believe that the present application is in condition for allowance. A Notice of Allowance is respectfully solicited. Should any questions arise, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,

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